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TURNING TREES TO IRON

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What is appalling about the continuing destruction of the tropical rain forests, apart from the ferocity of the pace and the obvious disastrous consequences for the global environment, is the sense of *deja vu*.

Most of Europe was once covered by a hardwood forest comparable in size to the Amazon Basin. James Frazer, in *The Golden Bough*, offers a lyrical description of the vastness of the forest and its meaning to early Europeans:

In the religious history of the Aryan race in Europe the workshop of trees has played an important part. Nothing could be more natural. For at the dawn of history Europe was covered with immense primeval forests, in which the scattered clearings must have appeared like islets in an ocean of green. Down to the first century before our era the Hercynian forest stretched eastward from the Rhine for a distance at once vast and unknown; Germans whom Caesar questioned had travelled for two months through it without reaching the end. Four centuries later it was visited by the Emperor Julian, and the solitude, the bloom, the silence of the forest appear to have made a deep impression on his sensitive nature. He declared that he knew nothing like it in the Roman empire.

Italy, before the ascendance of Rome, has possessed its own dense forests of elms, chestnuts, and oak; the Greece, prior to the Classical era, was substantially wooded.

Archaeologists have long observed that ancient Mesopotamia - the area known as the Fertile Crescent, which gave rise to the Sumerian, Phoenician, and Hebrew civilizations - was once verdant with grazing lands and groves of Acacia and pistachio trees. But by the time the Old Testament was completed the Fertile Crescent was already experiencing deforestation - literally the same deforestation and desertification that is going on today at an accelerated pace, as the Sahara creeps deeper into Africa every year.

Today, the view from outer space is frightening:

"Madagascar is still green with tropical forest," astronaut Karl Henize reported in *The Home Planet*, "but probably not for long. The ocean around that island is coloured a thick bloody red by the silt that is being eroded from recently deforested areas."

"Africa," observed another astronaut, "looked ill with its sandstorms and the dried-out areas." Today, the African jungle exists largely in the imaginations of non-Africans.

How did it happen? How could the European "worship of trees" have given way to these moonscapes?

Today the pace has accelerated: the world's remaining forests are being ravaged by environmental factors such as acid rain, as well as by rapacious logging. However, a look at the historical causes of deforestation reveal that while many trees

were felled, and continue to be felled, for domestic purposes - as fuel for cooking and heating, as well to obtain lumber and to clear land for farming - and while this burden continues to be exacerbated by overgrazing, bad soil management, inappropriate land-use, droughts, fires, and political turmoil, nevertheless the primary cause of European deforestation is the one we often overlook because it seems least relevant today. Most of the forests of Europe and the Middle East were reduced to charcoal not to satisfy household needs, but to supply heat for manufacturing processes.

In the Mideast, as early as 3,000 B.C. trees were being felled in great numbers in order to meet the Sumarian demand for houses that were plastered inside and out. The key ingredient for plaster was lime, which had to be baked at a high temperature in wood-fired kilns. Additional trees were felled to meet the Phoenician demand for pottery, bricks, and glass. When metallurgy made its early appearance in this region - first copper, then bronze, and finally iron; each metal having a higher melting point than the preceding one - the demand for firewood became insatiable.

Ironmaking technology was developed in southern Turkey about 1,000 B.C., and used by the Hittites to gain military control over the Hebrews and other neighbouring peoples. From the Hittites the secret of ironmaking spread to the Philistines and the Greeks, ushering in the classical era of Greece. The Greeks carried it to their colonies in Sicily and to Scythia, which is now part of the Soviet Union. Ironmaking spread along the Phoenician trade routes to Sardinia and southern Iberia. It moved north through Europe and south through Africa.

Wherever ironmaking took over, it revolutionized weaponry and hence the balance of power, and it did away with the forest - altering the relationship between humans and the rest of nature. Ironmaking rechanneled human energies, and restructured the European mind.

Iron refined into steel could be tempered and turned into blades lighter and stronger than bronze. The abundance of iron ore - which comprises about 17 percent of the earth's crust, unlike the scarce tin required to make bronze - took edged weapons from the hands of an elite and placed them in the hands of armies. Iron-tipped plowshares succeeded in turning over the heavy soils of Europe, where the lighter Roman plow had failed. Steel axes felled more trees.

Iron and steelmaking facilitated the European conquest of the world, in two ways. First, it led to a formidable array of weapons and armour and the increasingly sophisticated mechanical devices that brought about the Industrial Revolution. Second, it led to a "paradigm shift" from a hunting-growing-trading mentality to a mining-manufacturing-exploitation mentality. It was this new mentality that colonized the New World, which viewed not only the new colonies but the nonindustrialized parts of the Old World as sources of raw materials and cheap labour that could be exploited for profit. The 'worship of trees' had given way to worship of the bottom line.

At the start of the Industrial Revolution in Sixteenth and Seventeenth Century England, the ironworks of England were built in the middle of forests, so as to feed the voracious blast furnaces. The Forest of Dean and the Forest of Worth became famous as ironmaking sites, as well as wooded tracts belonging to the Crown and to monastic bodies. Sussex, rich in timber and close to London, became a center of industry. As early as the Sixteenth Century, the growing shortage of timber was perceived as a threat to shipbuilding and hence to national security. In 1558 the ironworks were prohibited from taking trees growing within 14 miles of the coast or any navigable river. Despite this and other half-measures, the forests continued to shrink.

In 1709 iron was smelted for the first time with coke, made from coal, thereby freeing ironmaking from its dependence on wood - but vastly increasing the burden on the environment by fossil fuel. In the meantime most of Europe had been deforested, and a philosophical equation had been drawn between 'rationalism' and the pursuit of profits. To appreciate the power of that legacy in Western thinking we have only to read the World Bank's policy paper on global warming, issued last year, which concluded that "the economics of vigorously pursuing [reforestation] are probably not favourable at this time." More cost-effective, presumably, is the present practice of fuelling Brazilian copper smelters with logs from the rain forests, in a bizarre reprise of the earlier deforestation of the Fertile Crescent.

Our separation from Nature has taken place at terrible cost, not only to native peoples who have been exploited or overrun in the past five hundred years - from the Gold Coast to Ireland, from Indian to Brazil - but to the Western psyche. Judaeo-Christian symbolism expresses the rift with Nature beautifully and violently: Adam and Eve are expelled from the garden; Christ is crucified on wood, with nails of iron. Neither image is surprising, considering that the ancient prophets got an early taste of both ecological ruin and the impaling power of iron.

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